



MINISTRY OF HEALTH  
SINGAPORE

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Licensees/ Managers of all Medical Clinics and Hospitals

**GUIDELINES ON SAFE SEDATION PRACTICE FOR NON-ANAESTHESIOLOGISTS**

The College of Anaesthesiologists, Academy of Medicine Singapore, led a taskforce in developing the "Guidelines on Safe Sedation Practice for Non-Anaesthesiologists". These guidelines aim to guide non-anaesthesiologists in medical clinics to provide sedation safely to patients and advise on the type and level of sedation that is appropriate for the clinic setting. A copy of the guidelines is enclosed.

2 All medical clinics, including stand-alone ambulatory surgical centres and stand-alone endoscopy suites licensed under the Private Hospitals and Medical Clinics (PHMC) Act, are expected to adhere to the "Guidelines on Safe Sedation Practice for Non-Anaesthesiologists" as a condition for approval of their clinic licences<sup>1</sup>. The personnel required and appropriate premises for various levels of sedation (*Annex A*) apply to all procedural sedation for adult and paediatric patients in medical clinics, unless otherwise specified in other Licensing Terms and Conditions/ Guidelines issued under the PHMC Act. The guidelines shall take effect on **2 June 2014**. MOH may periodically conduct audits on medical clinics in order to assess their adherence to the guidelines.

3 Meanwhile, all hospitals are encouraged to adhere to the guidelines as good practice standards for procedures involving the use of sedation by non-anaesthesiologists.

4 For any further clarification, please e-mail us at [elis@moh.gov.sg](mailto:elis@moh.gov.sg).

A/PROF BENJAMIN ONG  
DIRECTOR OF MEDICAL SERVICES

<sup>1</sup> In accordance with sections 6(2)(a) and 6(5) of the PHMC Act





ACADEMY OF MEDICINE, SINGAPORE  
PATRON: PRESIDENT OF REPUBLIC OF SINGAPORE

# **Guidelines On Safe Sedation Practice for Non-Anaesthesiologists in Medical Clinics, including Stand-Alone Ambulatory Surgical Centres and Stand-Alone Endoscopy Suites in Singapore**



ACADEMY OF MEDICINE, SINGAPORE  
PATRON: PRESIDENT OF REPUBLIC OF SINGAPORE

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## EXECUTIVE SUMMARY

1. The administration of sedation by non-anaesthesiologists for some procedures performed in medical clinics, including stand-alone ambulatory surgical centres and stand-alone endoscopy suites is widely practised in Singapore.
2. A task force that was initiated by MOH and led by the College of Anaesthesiologists, with representatives from the other Chapters and Colleges, has put together the following guidelines for the practice of sedation.
3. These guidelines relate to the practice of sedation and focus on key areas such as training of non-anaesthesiologist sedationists, patient selection, monitoring of the sedated patients and the post-procedural management of such patients.
4. As far as possible, the guidelines aim to guide non-anaesthesiologists in providing sedation safely to patients undergoing procedures in medical clinics, including stand-alone ambulatory surgical centres and stand-alone endoscopy suites. The guidelines do not apply to the practice of palliative sedation or procedures done under sedation in hospitals such as its emergency departments, its ambulatory surgical centres or its clinics.

## 1. INTRODUCTION

- 1.1 The aims of procedural sedation and analgesia are to ensure patient safety and comfort during the planned procedure. Options available range from minimal sedation through moderate sedation to deep sedation.
- 1.2 Adequate monitoring of the sedated patient is necessary as morbidity has occurred from inadvertent excessive sedation.<sup>(1,4,10)</sup>
- 1.3 The use of propofol for sedation by non-anaesthesiologists is an area of concern as the drug has a low safety margin and easily induces a deeper level of sedation than intended. Non-anaesthesiologists need to be adequately trained to recognize and rescue patients from these deep levels of sedation. The licensing of propofol by international professional bodies limits its use to hospitals or ambulatory surgical centres by medical doctors who are anaesthesiologists or intensivists.<sup>(2,3)</sup>
- 1.4 Non-anaesthesiologists shall limit their sedation techniques to achieve a level of minimal or moderate sedation as defined by the American Society of Anaesthesiologists (ASA).<sup>(3,4)</sup>
- 1.5 Moderate Sedation for paediatric patients must only be undertaken by teams that have had adequate training and experience.
- 1.6 The need for sedation must be discussed with the patient or the caregiver prior to the procedure. Alternatives to moderate sedation must be offered and discussed. This shall include the option of having an anaesthesiologist perform the sedation and the possibility of general anaesthesia.
- 1.7 Analgesia shall be given for painful procedures. Inducing a deeper level of sedation is not a substitute for adequate analgesia. Patients must be counseled on the possibility of some discomfort and pain during the procedure.
- 1.8 Proper documentation must be maintained at all times before, during and after the procedure, including fitness for discharge.

## 2. DEFINITIONS

- 2.1 Sedation and analgesia result in a continuum of states ranging from minimal sedation (anxiolysis) to general anaesthesia.<sup>(4)</sup>

Definitions of general anaesthesia and levels of sedation/analgesia as adapted from the ASA are shown below:

	<b>Minimal Sedation (Anxiolysis)</b>	<b>Moderate Sedation/Analgesia (Conscious sedation)</b>	<b>Deep Sedation/Analgesia</b>	<b>General Anaesthesia</b>
<b>Responsiveness</b>	Normal response to verbal stimulation	Purposeful response to verbal or tactile stimulation	Purposeful response after repeated or painful stimulation	Unarousable, even with painful stimulus
<b>Airway</b>	Unaffected	No intervention required	Intervention may be required	Intervention often required
<b>Spontaneous ventilation</b>	Unaffected	Adequate	May be inadequate	Frequently inadequate
<b>Cardiovascular function</b>	Unaffected	Usually maintained	Usually maintained	May be impaired

**Minimal Sedation (Anxiolysis)** is a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and physical coordination may be impaired, airway, ventilation and cardiovascular functions are unaffected.

**Moderate Sedation/Analgesia (“Conscious Sedation”)** is a drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

**Deep Sedation/Analgesia** is a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

**General Anaesthesia** is a drug-induced loss of consciousness during which patients are not arousable even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway and positive pressure ventilation may be required because of depressed respiratory function or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

As sedation is a continuum, it is not always possible to predict how an individual patient will respond. Hence, the proceduralist and/or sedationist (see definition below) must be able to rescue a patient whose level of sedation becomes deeper than initially intended.

*Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.*

*Rescue of a patient from a deeper level of sedation than intended is an intervention by a practitioner proficient in airway management and advanced life support. The qualified practitioner corrects adverse physiologic consequences of the deeper-than-intended level of sedation (such as hypoventilation, hypoxia and hypotension) and returns the patient to the originally intended level of sedation. It is not appropriate to continue the procedure at the unintended deeper level of sedation.*

## 2.2 Definitions of Medical Professionals and Medical Clinics

A **medical practitioner** refers to a person who is registered with the Singapore Medical Council (SMC) under the Medical Registration Act (Cap. 174). A **dental practitioner** refers to a person who is registered as a Division I dentist under the Dental Registration Act (Cap. 76).

An **anaesthesiologist** refers to a medical practitioner who is registered with the SMC on the Register of Specialists as an anaesthesiology specialist.

An **intensivist** refers to a medical practitioner who is registered with the SMC under the sub-specialty of Intensive Care Medicine.

A **Registered Nurse (RN)** refers to a person who is registered as a registered nurse with the Singapore Nursing Board (SNB) under the Nurses and Midwives Act (Cap. 209). An **Enrolled Nurse (EN)** refers to a person who is enrolled as an enrolled nurse with the SNB under the Nurses and Midwives Act (Cap. 209).

Under the Private Hospitals and Medical Clinic (PHMC) Act (Cap. 248), “**Medical Clinic**” means any premises used or intended to be used by a medical practitioner, a dentist or any other person —

- a) for the diagnosis or treatment of persons suffering from, or believed to be suffering from, any disease, injury or disability of mind or body; or
- b) for curing or alleviating any abnormal condition of the human body by the application of any

apparatus, equipment, instrument or device requiring the use of electricity, heat or light, but does not include any such premises —

- i. which are maintained by the Government or the National University of Singapore; or
- ii. which form part of the premises of a licensed private hospital.

“**Stand-Alone Ambulatory Surgical Centres**” refer to medical clinics that are approved to provide ambulatory surgery as a special care service under Regulation 37 and Third Schedule of the PHMC Regulations. “**Stand-Alone Endoscopy suites**” refer to medical clinics that are approved to provide endoscopy as a special care service under Regulation 37 and Third Schedule of the PHMC Regulations.

## 2.3 Terms used in guidelines

A **Sedationist** refers to the person who administers the sedation and monitors the patient during this process until full recovery. Depending on the circumstances (*Annex A*), such a person may be an anaesthesiologist or medical/dental practitioner. Where the sedation is administered by a registered nurse (RN) (referred to as “nurse sedationist”), he/she shall only do so under supervision.

A **Proceduralist** refers to the medical/dental practitioner who performs the therapeutic or diagnostic procedure.

**Paediatric patients** refer to patients below 12 years of age. **Neonates** refer to paediatric patients below the age of 1 month.

## 3. SCOPE OF GUIDELINES

- 3.1 All medical clinics, including stand-alone ambulatory surgical centres and stand-alone endoscopy suites, carrying out procedures that involve the practice of sedation by non-anaesthesiologists shall adhere to these guidelines, including the matrix in *Annex A* which summarises the personnel required and appropriate premises for various levels of sedation. The guidelines apply to procedural sedation for adult and paediatric patients in medical clinics, unless otherwise specified. The guidelines do not apply to the practice of palliative sedation or procedures under sedation in hospitals such as its emergency departments, its ambulatory surgical centres or its clinics.
- 3.2 The choice of sedatives and sedation techniques is dependent on the experience and preference of the individual non-anaesthesiologist sedationist and requirements or constraints imposed by the patient or procedure.
- 3.3 As it is not always possible to predict how each patient will respond to sedatives and analgesics, medical/dental practitioners intending to provide a given level of sedation must be able to rescue patients whose level of sedation becomes deeper than initially intended. For moderate sedation, this means the ability to manage a compromised airway or hypoventilation.

## 4. ROLE OF SEDATIONIST / PROCEDURALIST

- 4.1 Only medical/dental practitioners who are qualified by education, training and/or accreditation to administer moderate sedation shall administer the sedation or supervise a registered nurse to administer the sedation in medical clinics.<sup>(4,5)</sup>
- 4.2 Where moderate sedation is administered, the practitioner performing the procedure (ie. proceduralist) must be distinct from the person monitoring the patient (ie. sedationist). The latter shall solely be involved in administering the sedation and monitoring the sedated patient and shall not perform any other tasks such as assisting with the procedure.

4.3 Deep sedation must not be administered in medical clinics, unless it is administered by an anaesthesiologist.

4.4 Sedation must not be administered to neonates in medical clinics.

## 5. EDUCATION AND TRAINING

5.1 The sedationist must have been adequately and specifically trained in sedation and monitoring of sedated patients. The sedationist must have the requisite knowledge and skills to perform sedation safely, and have completed a formal training programme in

- a) Safe administration of sedatives and analgesics; and
- b) Rescue of patients who exhibit adverse physiologic consequences of a deeper than intended level of sedation.

The training may be part of a relevant specialist training programme, Residency or Fellowship, or any educational programme as may be specified by MOH from time to time.

See *Annex B: Aims and Objectives of Training in Sedation*<sup>(7)</sup>

5.2 The proceduralist or sedationist is advised to be competent in advanced resuscitation skills (eg. Advanced Cardiac Life Support (ACLS) or its equivalent). This would not apply to minimal sedation involving either (a) less than 50% nitrous oxide (N<sub>2</sub>O) in oxygen with no other sedative or analgesic medications by any route, or (b) a single, oral sedative or analgesic medication administered in doses appropriate for the unsupervised treatment of insomnia, anxiety, or pain.

5.3 Where minimal to moderate sedation is administered to paediatric patients above the age of 1 month old, the proceduralist or sedationist is advised to be competent in advanced resuscitation skills (eg. Advanced Resuscitation Course in Paediatrics (ARC) or its equivalent).

5.4 All staff involved in the procedure are advised to be, at minimum, competent with basic resuscitation skills (eg. Basic Cardiac Life Support (BCLS) or its equivalent).

## 6. PATIENT SELECTION AND PRE-SEDATION ASSESSMENT

6.1 Sedation for procedures performed in medical clinics shall be limited to short and uncomplicated procedures. In painful procedures, additional forms of pain relief (eg. local anaesthesia) shall be concurrently administered.

6.2 Patients must be properly evaluated by the medical/dental practitioner prior to the sedation. Such evaluation shall include, but not limited to, the following:

- a) Presence and severity of co-morbidities or other conditions that may put the patient at risk of significant mortality or morbidity if sedated;
- b) Presence of contraindications to sedation or drugs to be used in sedation (sedatives);
- c) Clinical observation
  - i. Level of consciousness
  - ii. Respiratory rate and pattern of breathing
- d) Vital physiologic parameters
  - i. Pulse oximetry
  - ii. Heart rate
  - iii. Blood pressure
  - iv. Electrocardiography, where appropriate.



- 6.3 High risk adult patients shall not be sedated by non-anaesthesiologists (e.g. ASA 3 and above) in medical clinics.
- 6.4 Paediatric patients above the age of 1 year and assessed to be ASA 1 can be given medications (see *Annex C*) for mild to moderate sedation in medical clinics by a proceduralist/sedationist. Paediatric patients below the age of 1 year and assessed to be ASA 1 can only be given Oral Syrup Chloral by proceduralist/sedationist.

ASA Physical Status Classification System

**ASA Physical Status 1** - A normal healthy patient

**ASA Physical Status 2** - A patient with mild systemic disease

**ASA Physical Status 3** - A patient with severe systemic disease

**ASA Physical Status 4** - A patient with severe systemic disease that is a constant threat to life

**ASA Physical Status 5** - A moribund patient who is not expected to survive without the operation

**ASA Physical Status 6** - A declared brain-dead patient whose organs are being removed for donor purposes

## 7. PATIENT PREPARATION

- 7.1 A written informed consent for sedation must be obtained from the patient or the caregiver (eg. for the paediatric patient). The consent form shall, at minimum, include the risks, benefits and alternatives to sedation. The possibility of reversal of the state of sedation and abandonment of the procedure in the event of complications must be explained
- 7.2 The patient or the caregiver (particularly for a paediatric patient) shall be given an option to be sedated by an anaesthesiologist.
- 7.3 An adequate preoperative fasting period must be observed by the patient prior to the administration of any sedation. The period of fasting may vary with the age of the patient. In general, the adult patient shall be fasted for at least 6 hours prior to the procedure and sedation. For paediatric patients, the minimum fasting periods for various ingested materials by the ASA Committee on Standards and Practice Parameters are as follows:

Ingested Material	Recommended Minimum Fasting Period (hours)
Clear liquids (eg water, fruit juices without pulp, carbonated beverages)	2 h
Breast milk	4 h
Infant formula / Non-human milk	6 h
Light meal (eg toast and clear liquids)	6 h

- 7.4 Prior to the administration of sedation, patients shall be advised that a prolonged period of impaired cognition may occur. The patient shall be instructed not to drive, drink, operate heavy or potentially harmful machinery or make legally binding decisions. When sedatives have been administered, the patient shall be advised that a responsible adult must accompany him home.
- 7.5 A reliable continuous venous access shall be in place when intravenous sedation is used.

## 8. INTRA-PROCEDURAL MONITORING OF SEDATED PATIENTS

- 8.1 During the procedure, all sedated patients must be monitored with respect to their vital signs, which shall include, but not limited to, the following:
- a) Clinical observation
    - i. Level of consciousness

- ii. Respiratory rate and pattern of breathing
  - b) Physiologic Monitoring
    - i. Continuous pulse oximetry <sup>(7,9,12,13,14)</sup>
    - ii. Heart rate
    - iii. Blood pressure every 5 minutes
    - iv. Electrocardiography where appropriate <sup>(11)</sup>
  - c) End tidal carbon dioxide monitoring by continuous capnometry where appropriate <sup>(16,17)</sup>
- 8.2 Audible alarms on the physiologic monitors must be activated and switched on throughout the period of sedation.

## 9. POST-PROCEDURAL MANAGEMENT

- 9.1 After completion of the procedure, the patient must continue to be monitored with respect to their vital signs as specified in section 8, and for adverse effects from either the procedure or sedation. The length of the post-procedural monitoring period/ recovery period must commensurate with the perceived risk to the patient. The patient must not be allowed to be discharged until he is reviewed by a medical/dental practitioner, and that the following criteria have been fulfilled:
- a) Has been medically cleared of any danger to his well-being that may arise from the procedure or sedation;
  - b) Has normal stable vital signs;
  - c) Is able to verbalise appropriately;
  - d) Is able to ambulate without assistance;
  - e) Has a responsible adult to accompany him home.
- 9.2 Verbal and written post-procedural instructions must be given to the patients and the responsible adults accompanying them at the time of discharge. These shall, at minimum, include instructions on the signs and symptoms of potential adverse outcomes. A 24-hour contact number in case of emergencies shall also be provided.
- 9.3 A documented system must be in place to ensure the safe transfer of patients from the medical clinic to an appropriate medical care facility should the need arise.

## 10. MEDICAL FACILITIES

### 10.1 Equipment

The following must be available:

- a) Resuscitation equipment which must be functional and effective at all times. See para 7.6 of the Specific Guidelines for Medical Clinics under the PHMC Act (1980) and Regulations (1991).
- b) All drugs must be properly labelled with the expiry dates clearly shown.
- c) All physiologic monitors must be switched on and in full working order during the period that requires monitoring.
- d) Oxygen therapy equipment must be fully functional and provide an adequate supply of oxygen.

e) All operating tables and patient trolleys must be able to be tilted in the head-down position.

## 10.2 Physical space

There must be a recovery area. The recovery area must be:

- a) Equipped with a patient's couch and the necessary resuscitative equipment such as oxygen apparatus, suction, defibrillator, pulse oximetry and other monitoring facilities;
- b) Adequate for staff movement while monitoring the patient and for the treatment of complications, if any.

10.3 There must be means of summoning emergency assistance when necessary (e.g. phone, intercom etc).

## 11. SEDATIVE AGENTS

11.1 All proceduralists and/or sedationists must be fully familiar with the use and pharmacology of all sedative drugs, and the indications and contraindications for these medications.<sup>(6)</sup> All proceduralists and sedationists must demonstrate competence in the use of sedative agents and the recognition and management of complications from their administration.<sup>(16)</sup>

11.2 The choice of sedative drugs is largely operator dependent. The medications chosen by the proceduralists and sedationists remain bounded by the prescribing indications, contraindications and precautions set by Health Sciences Authority (HSA)/ US Food and Drug Administration (FDA).

11.3 Where benzodiazepines are used either alone or in combination with an opioid for sedation, the proceduralists and sedationists shall comply with the Ministry of Health Clinical Practice Guidelines on the prescription of benzodiazepines (MOH Clinical Practice Guidelines 2/2008), where relevant.

11.4 When opioids are used, antagonists like Naloxone must be available.

11.5 Sedation for paediatric patients in medical clinics shall only be administered via the oral or inhalational route. The common medications for sedation in paediatric patients and its recommended dosages are in [Annex C](#).

11.6 A source of oxygen must be readily available. Patients shall receive oxygen throughout the period of the procedure and recovery<sup>(19,21)</sup>

## 12. PROPOFOL

12.1 Propofol (di-isopropylphenol) is a potent anaesthetic drug. It has been used for sedation in sub-anaesthetic doses. Overdose of the drug can lead to severe respiratory and cardiovascular compromise.

12.2 Propofol must only be administered by a medical practitioner trained in its use (either an anaesthesiologist or intensivist) because it has:

- a) Potential to cause rapid and profound changes in the sedative/anaesthetic depth;
- b) No specific antagonist;
- c) Marked synergy with other sedative drugs;

- d) Resulted in deaths when infused at higher than recommended doses over a prolonged period of time.

12.3 Propofol shall **NOT** be used in medical clinics, unless it is

- a) administered by anaesthesiologists; **and**
- b) for the purposes of procedural sedation.<sup>(2,3)</sup>

### 13. DOCUMENTATION

13.1 Detailed records pertaining to the patient shall be properly kept. At minimum, these shall include the following

- a) Names of all staff involved in the sedation and procedure;
- b) History, physical examination and investigations of the patient;
- c) Dosages and timing of drugs administered;
- d) Monitored vital signs (electronic printout if available), including the “pre-procedural sedation & monitoring checklist” in Annex D;
- e) Recovery status of the patient;
- f) Fitness for discharge.

**ANNEX A: SUMMARY OF PERSONNEL REQUIRED AND APPROPRIATE PREMISES FOR VARIOUS LEVELS OF SEDATION<sup>^</sup>**

		Level of sedation Sedative Agents	Minimal Sedation	Moderate Sedation/ Analgesia	Deep Sedation/ Analgesia	General Anaesthesia
<b>Adult patients (assessed to be ASA 1 or ASA 2)</b>	<b>Propofol</b>	<b>Proceduralist and Sedationist must be 2 distinct persons –</b> Proceduralist (Medical/Dental Practitioner) Sedationist (Anaesthesiologist)				
	<b>Sedative drugs other than propofol</b>	<b>Proceduralist and Sedationist may be the same person (ie. at least a medical practitioner)</b>	<b>Proceduralist and Sedationist must be 2 distinct persons –</b> – Proceduralist (Medical/Dental Practitioner) Sedationist (Medical/Dental Practitioner or Registered Nurse administering sedative drugs under supervision)	<b>Proceduralist and Sedationist must be 2 distinct persons –</b> Proceduralist (Medical/Dental Practitioner) Sedationist (Anaesthesiologist)		
<b>Paediatric patients above 1 month old (assessed to be ASA 1)</b>	<b>Appropriate premises at which sedative agents can be used</b>	<b>All Medical Clinics</b>				<b>Medical Clinics that are Standalone Ambulatory Surgical Centres</b>
		<b>All Medical Clinics</b>  <i>*Sedation for paediatric patients in medical clinics shall only be administered by oral or inhalational route. Please refer to section 6.4, section 11 and Annex C.</i>			<b>Shall not be administered in medical clinic setting</b>	

<sup>^</sup> The personnel required and appropriate premises for various levels of sedation (above) apply to all procedural sedation for adult and paediatric patients in medical clinics, unless otherwise specified in other Licensing Terms and Conditions/ Guidelines issued under the PHMC Act.

## **ANNEX B: AIMS AND OBJECTIVES OF TRAINING IN SEDATION<sup>(24)</sup>**

The medical practitioner who aims to be certified to perform sedation safely shall have the requisite knowledge and skills.

### **TRAINING FOR MODERATE SEDATION**

#### **a. KNOWLEDGE**

##### COMPETENCY DESCRIPTION

Can understand

- i. What is meant by conscious sedation as opposed to deep sedation and general anaesthesia.
- ii. How to recognize the patient at risk e.g. difficult airway.
- iii. the pharmacology of drugs commonly used to produce sedation
- iv. the need for and means of monitoring the sedated patient including the use of commonly used sedation scoring systems
- v. how drugs should be titrated to effect and how the use of multiple drugs with synergistic actions can reduce the therapeutic index and hence the margin of safety
- vi. the importance of recognising the following when multiple drug techniques are employed:
  - Increased potential for adverse outcomes when two or more sedatives/analgesics are administered together and the importance of titrating them to effect
  - Knowledge of each drug's time of onset, peak effect, duration of action and potential for synergism leading to unpredictable responses
  - Can list which sedative drugs should not be given to the elderly [over 80 years of age], with reasons
- vii. the risks associated with conscious sedation including [but not exclusively] those affecting the respiratory and cardiovascular systems
- viii. the particular risks of multiple drug sedation techniques
- ix. the unpredictable nature of sedation techniques in children
- x. what is meant by "deep sedation" and when its use may be justifiable, identifies the associated risks and how these may be minimised to ensure patient safety.
- xi. the pros and cons of sedation versus general anaesthesia in high risk patients.

#### **b. SKILLS**

- i. the ability to select patients for whom sedation is an appropriate part of clinical management
- ii. the ability to explain sedation to patients and to obtain consent
- iii. the ability to administer and monitor intravenous sedation to patients for clinical procedures
- iv. the ability to recognize and manage the complications of sedation techniques appropriately, including recognition and correct management of loss of verbal responsiveness
- v. the ability to maintain airway in a deeply sedated patient
- vi. the ability to correctly administer oxygen and to recognise the different apparatus for oxygen therapy.

## ANNEX C: COMMON TYPES OF MEDICATIONS FOR SEDATION IN PAEDIATRIC PATIENTS IN MEDICAL CLINICS BY NON-ANAESTHESIOLOGISTS

### (I) ORAL MEDICATIONS:

Oral Medication	Recommended Dosages
Syrup chloral <ul style="list-style-type: none"> <li>Syrup Chloral can be used for children below 1 year for renal scans and other radiological studies</li> </ul>	30-80 mg/kg (max 1 g)
Syrup Promethazine <ul style="list-style-type: none"> <li>Promethazine only to be used in children aged 2 years and above</li> </ul>	0.2 – 0.5 mg/kg/dose (max of 10-25 mg per dose)
Syrup Midazolam <ul style="list-style-type: none"> <li>Syrup Midazolam only to be used for children &gt;15 kg.</li> <li>Children below 1 year old given syrup chloral shall be fully monitored as if given midazolam</li> </ul>	0.2-0.5mg/kg (max 15mg)

- Main side effects of the oral medications are respiratory depression, apnoea and bradycardia.

### (II) INHALATIONAL MEDICATIONS:

- Use of nitrous oxide as inhalational sedation in the medical clinic setting shall conform to all recommendations to its use in the paediatric population. It may be appropriate for use in paediatric population in the medical clinic setting for those who are able to co-operate.

**ANNEX D: PRE-PROCEDURAL SEDATION & MONITORING CHECKLIST**

Patient's name label

(To be completed by attending doctor)

<u>Pre-Procedural Sedation and Analgesia Assessment</u>	<u>Contra-Indications</u>
<input type="checkbox"/> No contra-indications to procedural sedation <input type="checkbox"/> Child is fasted adequately <input type="checkbox"/> Clinical status stable/ unchanged & vital signs checked <input type="checkbox"/> Consent form signed & witnessed <input type="checkbox"/> Procedure/ risks explained <input type="checkbox"/> Written orders in procedure form	a. Increased Risk of Airway Compromise b. Child less than 1 yr old (except for oral chloral) c. Acute respiratory infection or exacerbation of Asthma d. Potential airway obstruction/difficult airway or history of difficult airway management / potential OSAS e. Increase in Intracranial Pressure f. Closed Head injury or loss of consciousness
Name, Signature & MCR No. of proceduralist : _____ Name, Signature & MCR No. of sedationist (where applicable): _____ Date: _____ Time: _____	

Main Diagnosis : \_\_\_\_\_  
 Weight : \_\_\_\_\_ Kg  
 Procedure : \_\_\_\_\_  
 Medication : \_\_\_\_\_  
 Dose & Route : \_\_\_\_\_

<b>Verification :</b>	Correct Patient	Correct Procedure
	Correct Medication/ Correct Dose	Correct Route
Read By : _____	Date/ Time	: _____

**Sedation Score:**

0	Unresponsive to painful stimulus	4	Drowsy, eyes open or closed, easily arousable
1	Arouses, but not to consciousness, with painful stimulus	5	Spontaneously awake without stimulus
2	Arouses slowly to consciousness, with painful stimulus	6	Anxious, agitated or in pain
3	Arouses to consciousness with moderate tactile or loud verbal stimulus		

**Airway:**

Normal (N) Maintained with ease (ME) Maintained with difficulty (MD) Not maintained (NM)

Monitor parameters every 5 minutes during procedure and every 15 minutes post-procedure till discharge criteria are met.

Time	Pre-Sedation Baseline Parameters										
Sedation Score											
Airway											
PR											
RR											
BP											
SpO <sub>2</sub>											



### Adverse Events during Procedural Sedation (if any)

NO YES (to duplicate form if present) (Can √ more than 1)
<b>Oxygen desaturation</b> [require airway intervention] Lowest SpO2 measured _____ %
<b>Central Apnea</b> [cessation of respiratory effort and requiring airway intervention]
<b>Partial Obstructive Apnoea</b> [stridor, snoring or retraction AND required airway intervention(s)]
<b>Complete Obstructive Apnoea</b> [ventilatory effort with no air exchange AND requiring airway intervention(s)]
<b>Laryngospasm</b> [partial or complete upper airway obstruction with desaturation not relieved by airway repositioning, suction or oral airway]
<b>Clinically Apparent Pulmonary Aspiration</b> [suspicion or confirmation of oropharyngeal or gastric contents in the trachea AND 1 or more of the following respiratory signs and symptoms in any of the 3 categories: i: Physical signs: cough, crackles, decreased breath sounds, wheezing, tachypnoea or respiratory distress ii: Oxygen requirement: desaturation requiring oxygen iii: CXR: focal infiltrates, consolidation or atelectasis]
<b>Retching/ vomiting</b> No. of times _____ [requiring additional treatment and delay in discharge]
<b>Bradycardia</b> [HR < 2 SD for age AND intervention required]
<b>Hypotension</b> [systolic BP < 5 <sup>th</sup> percentile for age AND required intervention]
<b>Myoclonus</b> [involuntary brief contractions requiring an intervention /medication and interferes with procedure. Hiccup included.]
<b>Generalised motor seizure</b>
<b>Hypersalivation</b> (Copious oral secretions requiring suctioning)
<b>Paradoxical response to sedation</b> [unanticipated restless or agitation in response to sedation drugs during sedation AND results in administration of other sedative medication, delay in completion of procedure or discontinuation of procedure]
<b>Unpleasant Recovery Reactions</b> [abnormal patient behaviour during recovery phase requiring treatment or delay in patient discharge]. Tick either criteria: <b>Inconsolable crying</b> <b>Delirium</b> (state of severe confusion, altered mental ) <b>Agitation</b> (restless, continuous activity) <b>Nightmares</b> <b>Hallucinations</b> (responds to sensory phenomena not physically present ) <b>Dysphoria</b> (mood of restlessness, depression and anxiety)
Permanent neurological injury
Death
<b>Others</b> , please state:

<p><b>Intervention (can tick more than 1):</b>  vigorous tactile stimulations      airway repositioning      suctioning      oxygen  oral airway      bagged and mask assisted ventilation      intubation  administration of medication, please state: _____  Chest compression      IV fluids      physical restraints      Delayed discharge</p>	
<p><b>Safety of Child:</b>  Communication to caregivers(s) on safety measures</p> <p><input type="checkbox"/> Secure cot/ trolley rails properly locked with a 'click' sound</p> <p><input type="checkbox"/> Place cot/ trolley rails up, when patient is unattended.</p> <p><input type="checkbox"/> Seek assistance</p> <p><input type="checkbox"/> Ensure the trolley is at its minimum height</p>	<p><b>Security of Child:</b>  Communication to caregivers on security measures</p> <p><input type="checkbox"/> Wearing of ID tag at all times</p> <p><input type="checkbox"/> Inform nurses before leaving the child</p>
<p><b><u>Discharge Criteria: (By Medical/Dental practitioner)</u></b></p> <p><input type="checkbox"/> Normal Vital Signs</p> <p><input type="checkbox"/> Recognises, interacts with or is consolable by Parent/ caregiver</p> <p><input type="checkbox"/> Verbalise appropriately accordingly to age</p> <p><input type="checkbox"/> Motor function appropriate for age (ambulate or sit without support)</p> <p><input type="checkbox"/> Responsible parent/ caregiver present</p> <p><input type="checkbox"/> Discharge instructions: _____</p> <p><b><u>Disposition:</u></b></p> <p><input type="checkbox"/> Discharged / Specialist Outpatient Clinic (SOC) appt / GP Referral</p> <p><input type="checkbox"/> Admitted for complications of sedation</p> <p><input type="checkbox"/> Admitted otherwise : _____</p> <p><input type="checkbox"/> Others (including AOR) : _____</p> <p>Time of Discharge : _____</p> <p>Attending Doctor : _____ Signature : _____</p> <p>Attending Nurse : _____ Signature : _____</p>	

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